A SUMMARY REPORT ON DEVELOPMENT OPPORTUNITIES IN THE FORT NELSON AREA

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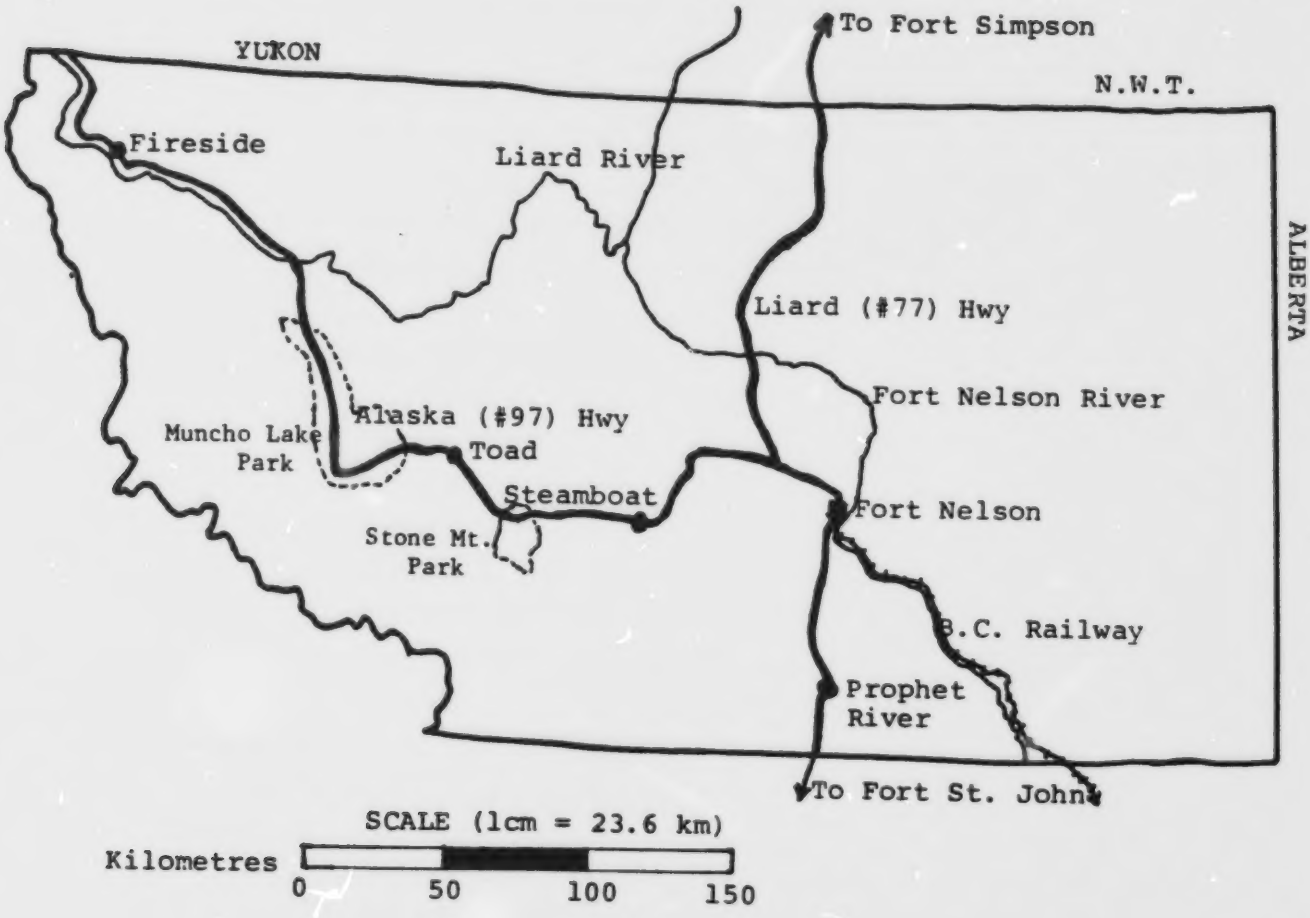
FORT NELSON - LIARD REGIONAL DISTRICT



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Introduction

Fort Nelson is an established community of just over 3,700 people in the northeastern corner of British Columbia. It is located at Mile 300 (km 480) on the Alaska Highway, 400 km north of Fort St. John. The area surrounding Fort Nelson is rich in natural resources including oil, natural gas, sulfur, extensive forests and undeveloped agricultural land. In spite of the challenges created by Fort Nelson's natural environment, such as its northern continental climate, large areas of muskeg and distance to large markets, development of these resources is proceeding successfully.

The purpose of this report is to provide an inventory of economic development opportunities in the Fort Nelson area. The scope of the study is the area covered by the Fort Nelson-Liard Regional District. The methodology of the report is to undertake an overview of Fort Nelson, and in each of the sectors driving economic activity in the area, to identify the resource base and physical development potential using the latest available information, as well as to discuss critical issues affecting the development opportunities. It should be noted that evaluation of the timing and the financial feasibility of the various opportunities was beyond the scope of this report.

This report was co-ordinated by the Ministry of Economic Development. Input was received from the Ministries of Energy, Mines and Petroleum Resources; Forests and Lands; Agriculture and Fisheries; Tourism, Recreation and Culture; and Transportation and Highways. Information received from the Town of Fort Nelson is gratefully acknowledged.

1.0 SUMMARY

Fort Nelson had its modern origin during World War II when the Alaska Highway and the local airport, which formed links in the North American defense system, were under construction. Improvements to this basic infrastructure, plus the addition of rail service in 1971, provided the basis for development of the resources of the surrounding area, particularly natural gas and timber.

Today the economy of the Fort Nelson area is based primarily on the resource sector and the community's role as a service centre for the Fort Nelson-Liard Regional District. The manufacture of forest products is of particular importance, as is exploration for and production of oil and natural gas. Fort Nelson's importance as a service centre stems from its transportation attributes; its airport, its strategic location on the Alaska Highway and navigable northern rivers, and its position as the northern terminus of the BC Rail network.

Fort Nelson's population has remained relatively stable since 1981. The population of the Town and surrounding areas was recorded in 1986 as about 5,300. The population is younger and more family-oriented compared to the Province's population as a whole. The labour force participation rate is relatively high in Fort Nelson. Major employers in the area are Tackama Forest Products and Westcoast Transmission.

This report identifies a number of development opportunities based on the resource base of the Fort Nelson area. The physical potential for further development of agriculture is substantial, and a number of possibilities for increased farming activity are examined. Tourist accommodation and other hospitality services are well developed, and Fort Nelson will benefit from future expansion of the Alaska Highway tourist market. A number of specialty tourism market opportunities based on local wilderness activities which have not yet been fully developed could be pursued to expand the Fort Nelson tourism industry. There are sufficient unallocated timber resources to supply projects such as a 500 tonne per day chemi-thermomechanical pulp mill and/or an oriented strand board mill with annual capacity of 250-300 million square feet, in addition to the sawmill and plywood mill already present. Fort Nelson is in a position to be a service centre for mineral production and exploration activities in the north and the community will continue to benefit from exploration for oil and natural gas in the region. In the longer term, Fort Nelson will also benefit from development of B.C. Hydro's Liard River power project.

The key issue concerning economic expansion in Fort Nelson is the supply of electricity. The supply limitations associated with existing thermal generating facilities are a factor which must be resolved before any industry that will require a large block of power (e.g. a pulp mill) can locate in Fort Nelson. Large scale wood processing development also requires that better information be collected on the availability of timber in the area. The condition of the Alaska Highway is of major importance to all Fort Nelson residents and early completion of paving of this road link is a high priority to the community.

2.0 Overview of Fort Nelson

2.1 ECONOMIC STRUCTURE

Fort Nelson was an isolated trapping and fur trading community for many years until the Alaska Highway was built in 1942. The presence of the U.S. Army and the establishment of an Royal Canadian Air Force base in 1942 resulted in substantial population growth and investment in Fort Nelson. Through the 40's and 50's, significant numbers of local businesses and industries were established in Fort Nelson as the community grew. Forestry, oil and gas have been important in Fort Nelson for many years, with the first small sawmill starting in the mid-1940's, the first oil well being drilled in the early 1950's and a natural gas treatment plant being built in the early 1960's.

Completion of the rail line to Fort Nelson by BC Rail in 1971 added to the significance of the community as a centre for the area and marked the beginning of expansion in the forest industries. From 1977 to 1981, Fort Nelson saw steady economic growth accompanied by substantial construction activity. During the period from 1982 to the present the economy stabilized, primarily as a result of lower oil and gas prices and adjustments in the forestry sector.

Today, the economy of the area is based on the resource sector and Fort Nelson's position as a service centre for the Fort Nelson-Liard Regional District. In particular, the manufacturing of forest products is of major importance, as is exploration for and production of oil and natural gas. Fort Nelson's service role derives from transportation; its airport and strategic location on the Alaska Highway and navigable northern rivers combine with its position as the northern terminus of BC Rail to provide a full range of transport options. Resources, opportunities, and issues within each component of the local economy are discussed in more detail in section 3 of the report.

2.2 POPULATION

2.21 POPULATION GROWTH

The total population of the Town and area has remained relatively stable since 1981, as Table 2.1 shows. Although preliminary data from the 1986 census confirms that the area population rose only 1.8 percent over the five years, it does not indicate variations that may have occurred during the period. In addition, it is not yet possible to assess changes within the age-sex composition since 1981.

Employment opportunities played a substantial role in determining population changes during the 1981-86 period. Events such as the closure of Fort Nelson Forest Products Ltd. in 1984, the move of 23 Department of Public Works employees and their families to Whitehorse, and recent declines in the petroleum industry have held down the population level. On the other hand, the opening of the Tackama plywood plant in 1985 contributed to population growth.

Table 2.1

Population Change in the Fort Nelson Area [1]

	1981	1986
Fort Nelson Town	3,724	3,729
Subdivision A, Peace River - Liard Census Division	805	1,054
Indian Reserves/Settlements		
Fontas 1	15	9
Fort Nelson 2	457	263
Kahntah 3	8	8
Prophet River 4	55	77
Lower Post	123	142
	5,187	5,282

1. Population statistics are for Subdivision A of the Peace River-Liard Census Divison, which differs slightly from the boundaries of the Fort Nelson-Liard Regional District.

2.22 CHARACTERISTICS OF POPULATION

The age and sex characteristics of Fort Nelson's population based on the 1971 and 1981 census are shown in Tables 2.2 and 2.3. Table 2.2 shows that Fort Nelson had higher percentages of its population in all age cohorts below the age of 34 when compared to British Columbia's population as a whole. With high percentages of children and people in the family formation ages, this indicates that the population of Fort Nelson was younger and more family-oriented than the rest of British Columbia.

Fort Nelson also has more males than females, although the imbalance has been diminishing. This is not unexpected, given that resource industries have a tendency to offer positions in which males more often seek employment. However, it also reflects the lower proportion of the population in the older age groups - in which females normally outnumber males by a wide margin.

As a community matures, the age-sex distribution tends to move closer to the provincial average. Persons born there, and those who have lived and worked in one place for a substantial part of their lives, will remain in that community when employment ceases due to retirement or for non-voluntary reasons. As the local labour pool expands, there is less reason for employers to seek workers from "outside" and in-migration of young, single males will decline.

Table 2.2

Age Distribution

Fort Nelson and British Columbia

Age	Fort Nelson %		British Columbia %	
	1971	1981	1971	1981
0 - 4	13.3	11.0	8.0	7.0
5 - 9	13.5	8.9	9.7	6.9
10 - 14	10.9	9.0	10.2	7.6
15 - 19	8.7	10.3	9.2	8.7
20 - 24	10.5	14.6	8.5	9.2
25 - 34	19.0	21.6	13.4	17.9
35 - 44	12.7	12.0	11.7	12.4
45 - 54	7.0	7.8	11.1	10.2
55 - 64	2.8	3.5	8.8	9.4
65 - 69	0.9	0.8	3.1	3.9
70+	0.7	0.5	6.3	6.9

Note: May not add to 100 because of rounding.

Table 2.3

Sex Distribution

Fort Nelson and British Columbia

Sex	Fort Nelson %		British Columbia %	
	1971	1981	1971	1981
Males	53.1	52.2	50.4	49.7
Females	46.9	47.8	49.6	50.3

2.3 LABOUR

2.31 EMPLOYMENT

The distribution of the labour force as recorded in the census provides an indication of the structure of the Fort Nelson economy. As shown in Table 2.4, one of the largest components is the transportation, communication and utilities sector. This reflects the service and transportation role which Fort Nelson plays in the area. While the community, business, and personal service sector comprises many smaller employers, the transportation, communications and utilities sector is dominated by Westcoast Transmission, which is involved in processing and transportation of natural gas. Another very important sector is manufacturing, which is dominated by wood products manufacturing. The largest employer in this sector and the area as a whole is Tackama Forest Products Ltd. Trade is another significant sector, represented primarily by the retail establishments in the community.

Table 2.4

Employed Labour Force by Industry. [1]

	1971	1981
Primary	50	90
Manufacturing	30	295
Construction	150	140
Transportation, Communication and Other Utilities	180	475
Trade	90	390
Finance, Insurance and Real Estate	5	65
Community, Business and Personal Services	100	625
Public Administration	15	80
Unclassified	70	10
Total Employed Labour Force	690	2,170

2.32 LABOUR FORCE CHANGE

The employed labour force in Fort Nelson is estimated to have declined slightly from 2,170 since 1981 because of changes in the economic climate of the Province in general and the resource sectors in particular. Resource industries have undergone major structural changes in the past five to eight years due to the increased application of technology. Employment also decreased in the oil and gas industry because of lower world prices.

2.33 PARTICIPATION RATES AND UNEMPLOYMENT

The labour force participation rate for Fort Nelson in 1981 was relatively high compared to the rest of the Province (see Table 2.5). This reinforces the assumption that many people moved to Fort Nelson because jobs were available.

1. Labour force statistics are for Subdivision A of the Peace River-Liard Census Divison, which differs slightly from the boundaries of the Fort Nelson-Liard Regional District.

Table 2.5

Labour Force Participation Rates (1981)

	Male %	Female %
Fort Nelson	89.0	70.3
British Columbia	78.3	52.7

Although the number of local unemployment insurance claimants is not an accurate measure of the number of those without jobs, the figure may be a useful approximation. Table 2.6 summarizes the annual averages for 1981 to 1985 and provides the provincial numbers for purposes of comparison. (It should be noted that these are not unemployment rates as determined by the monthly labour force survey. The working age population includes persons not in the labour force, and not all those without jobs are entitled to claim UIC benefits.)

Table 2.6

Unemployment Insurance Statistics

Indicator	Fort Nelson	British Columbia
Working Age Population 1985	2,464	2,295,527
Claimants 1985	258	184,598
Female (%)	43.8	39.4
Total under age 25 (%)	29.2	22.3
Claimants as Percent of Working Age Population		
1981	3.1	3.6
1982	8.5	7.7
1983	8.8	8.0
1984	8.7	8.1
1985	10.5	8.0

2.4 TRADE AND SERVICES

3.51 EXISTING ESTABLISHMENTS AND SERVICES

Fort Nelson has a variety of retail and service establishments, including financial, insurance and real estate businesses. The town offers all the recreational, educational, health care and related public services that would be expected in a community of this size. In terms of business-oriented services (as opposed to people-oriented), the community plays an important role as a service centre for vehicular traffic on the Alaska and Liard highways and for the oil and gas industry.

Services provided in Fort Nelson include a playschool, daycare centre, and complete curriculum from kindergarten to grade 12. Academic, vocational, and hobby courses are offered at Northern Lights College. The community has a 41-bed hospital and municipal, provincial and federal government offices. Recreational services include a library, swimming, skating, curling, golf, skiing, and facilities for many other activities.

Tertiary activities related to tourism and highway traffic are expected to expand as these volumes increase over time. Other business service activity will continue to be closely linked to the performance of the natural resource sector, in particular oil and natural gas and forestry. The level of business activity is expected to grow to accommodate any developments in these sectors.

2.5 TRANSPORTATION INFRASTRUCTURE

The Fort Nelson area is served by a wide variety of transportation facilities utilizing air, water and land based modes of travel.

(a) Highways

Fort Nelson is located at mile 300 (km 480) of the Alaska (no. 97) Highway which provides a transportation corridor from Fort St. John, 400 km to the south, to Watson Lake in the Yukon, 530 km northwest, and beyond. Most of the British Columbia portion of the highway is maintained by Public Works Canada and is approximately thirty percent asphalt, sixty percent bitumen and the remainder gravel surfaced. The federal government is currently upgrading the highway, which when completed will be paved for its full length.

Twenty-four kilometres north of Fort Nelson, the Liard (no. 77) Highway branches off the Alaska Highway. This highway stretches 175 km north to Fort Liard in the Northwest Territories and a further 300 km to Fort Simpson on the MacKenzie River. The Liard Highway is a gravel surfaced, two-lane road that is well maintained both summer and winter. Due to its strategic location on both of these highways, Fort Nelson serves as the base for several trucking firms, as well as a depot for Greyhound Bus Lines.

(b) Rail

The community is served by BC Rail, which connects the region by rail to other points in North America via Fort St. John. The railroad provides southbound transportation for the forest products, sulphur and other products shipped from the area, as well as bringing in supplies from the south for Fort Nelson and destinations in the Yukon and Northwest Territories. BC Rail is currently in the midst of a program to upgrade its track between Fort St. John and Fort Nelson.

(c) Air

The airfield at Fort Nelson has two runways (one 1,950 metres long and the other 1,275 metres), which provide service to aircraft ranging from light private aircraft up to Boeing 737's.

Scheduled air service to the Fort Nelson area is provided by Canadian Airlines International (CAIL) with frequent flights south through Fort St. John and north to Watson Lake in the Yukon. There are six charter aircraft firms in the Fort Nelson area providing both fixed and rotary wing service. These charter services are extensively used by the oil and gas exploration companies to fly into the remote airstrips located near the exploration and production fields.

(d) River Barges

The Fort Nelson and Liard River systems provide a further base for transportation. Barges operating on these rivers serve an area from Fort Nelson to the Beaufort Sea in the north. The main commodities carried by these barges are fuel and

large pieces of equipment bound for the oil fields. However, other goods are also carried, especially those going to locations not accessible by road. The season for barging usually extends from May until October.

(e) Summary

Fort Nelson's transportation infrastructure is well developed and meets the current needs of the local economy. Existing facilities are believed to be adequate to handle any additional traffic flows resulting from further industrial development in the area. Suggestions for future infrastructure development have been made in the community, e.g. an all weather road directly to High Level, Alberta. Fort Nelson residents would also like to see the paving of the rest of the Alaska Highway completed as soon as possible.

3.0 Resource Development Potential

3.1 AGRICULTURE

3.11 RESOURCE BASE

For purposes of the 1986 Census of Canada, Fort Nelson and surrounding area was designated Subdivision A of the Peace River-Liard Census Division. Unfortunately, because Subdivision A contained only 23 farms (as defined for the Census) all data were combined with those of Subdivision B (North Peace). Although separate census statistics for Fort Nelson are not available, estimates have been prepared by the local Economic Development Strategy Committee (EDSC).

The EDSC reports that approximately 8,000 hectares have been cleared and broken in the Fort Nelson area, of which 800 to 1,000 hectares are being actively farmed. Farming activity is concentrated in the Jackfish Creek area, 13 kilometres south of Fort Nelson, and in an area immediately north of the municipal boundaries. In 1981, the Ministry of Lands, Parks and Housing made available 7,285 hectares of agricultural land in the McConachie Creek area approximately 30 kilometres north of the Town. Clearing and breaking of this land is proceeding. Agricultural production in the Fort Nelson area at present includes cereal and forage crops, seeds, livestock, and honey. Cereal crops include barley, oats and some feed wheat, all of which is consumed locally.

The physical potential for the development of agriculture in the Fort Nelson area is substantial. Some 56,000 hectares of land are classed as having Class 4 soils or better (based on the Canadian Land Inventory classification system). The climate is similar to that of the Peace River district

and is suitable for the production of a wide range of cereal and forage crops. Cereal crop yields are reported to be as high as anywhere else in the Peace River district. Forage crop production experiments carried out by the Beaverlodge Research Station have also proven successful.

3.12 DEVELOPMENT POTENTIAL

There is substantial potential for increased farming activity in the Fort Nelson area, particularly if monoculture is avoided and diversity is encouraged. This potential will be enhanced when world agricultural surpluses are reduced and farm commodity prices move to higher levels. Opportunities can be stated in terms of production for both import replacement and export from the area. Possibilities include the following activities.

(a) Grain

As a result of the Western Grain Transportation Act passed in 1986, the cost of shipping grain for export from Fort Nelson has decreased, removing one of the barriers to this activity. However, for the time being, Fort Nelson farmers still face export grain markets characterized by over-supply and low prices, as do other farmers in Western Canada. Clearly the viability of grain production in the Fort Nelson area in the immediate future is closely linked to livestock production. Increased local livestock production would provide an important market for expanded feed grain acreage and output.

(b) Forage seeds

The area provides an ideal environment for production of forage seeds, being relatively isolated and weed free. The end product has a high value to weight ratio and is able to absorb high costs of transport to markets. Forage seed production has been carried out for a number of years by Fort Nelson farmers belonging to the Canadian Seed Growers Association. This established industry provides the basis for expanded future production of forage seeds.

(c) Honey

High quality honey from the area may command high prices if it can be successfully marketed as a gourmet product. Fort Nelson honey is of high quality and relatively free of contaminants. Since honey is generally marketed as a sugar substitute, its price is related to the supply and price of sugar.

(d) Fur farming

Given the increased opposition to trapping wild fur bearers, the potential for ranch furs should improve. Fort Nelson has advantages in this regard (cold winters, isolated fur farming areas). This industry would also benefit from the increased access to appropriate feeds as local livestock and slaughtering activity increase.

(e) Game farming

In May, 1987, the provincial government approved the expansion of the game farming industry to allow limited farming of bison and fallow deer on fenced private property. Although the requirement that fences be installed can make the cost of initial development very high, there is a rapidly growing market for meat, hides and ancillary products.

(f) Cow-calf operations

Beef cattle operations could be significantly increased, as they fit well with grain/forage enterprises, and grazing is possible on both forested land and property that has been logged but is not sufficiently improved for cultivation. Producers who wish to market their livestock outside the area must find ways to offset the cost of transportation. Co-operative shipping efforts to ensure full truckload or carload lots would improve the viability of such operations.

(g) Saskatoons

Although this native prairie area berry has long been appreciated for its suitability for pies, preserves, etc., it has only recently been bred for commercial purposes. Small scale production may be viable to serve local markets. Development of "export" sales would, like honey, depend upon successfully marketing processed products as gourmet items.

(h) Farm forestry

Due to the varying nature of soils, drainage, topography, etc., not all land within farm units can be cultivated or utilized for cleared pasture. These sites are often suitable for intensive forest management and can produce a reasonable return over the longer term. There may also be opportunities to manage Crown forest land under the farm woodlot program.

(i) Import substitution

High inward freight costs and an area population exceeding 5,000 permanent residents (plus significant numbers of tourists and transient employees in the oil and natural gas industry) suggest opportunities for agricultural production for the local market. Further study is required to properly assess the viability of these opportunities, but products such as eggs, poultry, milk and dairy products, hardy vegetables and red meats appear as possibilities. Such diversification is largely predicated on the assumption that forage and feed grain output will increase commensurate with local needs.

3.13 ISSUES

The potential growth of farming in Fort Nelson is affected, whether directly or indirectly, by world markets for agricultural products. Efforts on the part of Canada and the U.S.A. to improve the agriculture sector's viability by encouraging all major producing/exporting nations to phase out all but emergency government financial support, will eventually benefit agriculture in areas such as Fort Nelson. However, the process is likely to be a gradual one.

Farmers developing land in the Fort Nelson area have in the past reported considerable difficulty with Crown land disposition policy. For example, local farmers found that the land prices established for the McConachie Creek project were too high and distorted the purchase prices applied to other lease-to-purchase parcels. However, this issue recently has been addressed by the Ministry of Forests and Lands, and problems faced by farmers have been resolved to a large extent.

3.14 SUMMARY AND CONCLUSIONS

The agriculture industry provides a community with a degree of stability often lacking in other resource sectors, and merits encouragement on that basis alone. In the Fort Nelson area it is probable that much of the initiative will come from present or future residents with a farming background who wish to enjoy a farm life style. This suggests that, at least in the initial stages, most farm operations will be on a part time basis. These producers will be the major factor in determining the nature and extent of agricultural development because of their abilities and their intimate knowledge of the land, the farming community as a whole and local market prospects. Fort Nelson farmers will be able to enjoy a natural competitive advantage by pursuing opportunities with particular emphasis on local markets and those to the north.

3.2 TOURISM

3.21 RESOURCE BASE

The tourism industry in the Fort Nelson area is based on the provision of highway-related services (accommodation, food, fuel, etc.) to both vacation and commercial travellers. Additional support is derived from specialty (destination) markets, the most important of which comprises big game hunters. The oil and natural gas industry has traditionally provided criticial revenues during the winter season in which exploration and drilling activity is concentrated.

Fort Nelson's strategic location has allowed the community to develop as a major overnight stop and service centre providing an extensive range of tourist services. Tourist accommodation and other hospitality services are particularly well developed with 379 hotel/motel units and 160 vehicle/camping spaces located in the community. Food services and entertainment facilities are also readily available.

In response to the growing Alaska Highway traffic, efforts have been made by local area residents to organize tours of community and regional attractions. This program has enjoyed success and has contributed significantly to the tourism appeal of the community and to the length of stay of visitors.

Big game hunting is an important seasonal activity with some 20 guiding and outfitting operations based in the area. Stone sheep, moose, bear, mountain goat, cariboo and deer are found here. Fishing enthusiasts may try their luck with Northern pike, Arctic grayling, Rocky Mountain whitefish and lake trout. Developing specialty markets include river rafting and other water sports (canoes, kayaks, jet boats) and wilderness hiking or riding.

3.22 DEVELOPMENT POTENTIAL

(a) Touring Market

The Alaska Highway touring market has potential for expansion given the aggressive tourism marketing programs of the State of Alaska and the Yukon Territorial Government. The Northwest Territories have signed a $13 million tourism development agreement with the federal government, which should make them an aggressive partner in marketing the North. The Peace River-Alaska Highway Tourist Association is also beginning to more aggressively market the Alaska Highway. The participation of the Town of Fort Nelson and local tourism operators in established marketing programs will contribute to increases in Alaska Highway tourism traffic.

In addition to participating in marketing programs directed at increasing traffic on the Alaska Highway, there are also opportunities to significantly expand Fort Nelson's role as a service centre and to more fully develop its attraction base, thereby increasing both the length of stay and level of tourism expenditures in the community. The average length of stay and per capita tourism expenditure have historically been lower in the Peace River-Alaska Highway tourist region than the British Columbia average, indicating opportunities for improvement.

(b) Specialty Markets

Some of the tourism specialty markets, such as big game hunting, are well established in the Fort Nelson region while others have yet to be developed to their potential. Specific

opportunities for increasing the profile of the Fort Nelson area to these specialty markets have been identified in the Tourism Industry Development Subsidiary Agreement report for the Peace River-Alaska Highway tourism region. The opportunities include:

(i) increased development of tours and marketing of wilderness river adventures including:

- fly-in canoe/kayak trips to the Ketchika and Gatgu wilderness rivers with pick-ups on the Alaska Highway terminus;

- white water rafting, jet boating, and canoe trips down the Fort Nelson, Prophet, Muskwa, and Lower Liard rivers;

(ii) heli-hiking;

(iii) wildlife viewing/photography with guides and outfitters;

(iv) glacier or heli-skiing in the northern Rockies;

(iv) flightseeing trips

(v) train tour packaging;

(vi) adventure packages which would combine a number of wilderness activities;

(vii) actively promoting Nahanni Park and developing additional tours of the Park which originate and terminate in Fort Nelson.

3.23 ISSUES

Issues which should be addressed in order to expand the tourism industry include the following:

(i) Extensive marketing of the Alaska Highway as the principal route to Alaska and the Territories (including participation in the marketing programs of the State of Alaska, the Yukon Territory, and the Northwest Territories).

(ii) Extensive marketing of the tourism services and attractions of the Fort Nelson region, either in the context of Alaska Highway marketing programs or through the separate initiatives of local operators and the Town;

(iii) Expansion of the attraction base of the community and region, particularly special community tourist events, regional specialty tours, etc.;

(iv) Opportunities to augment the existing tourist accommodation of the community;

(v) The continued upgrading of the Alaska Highway, which is vital to the expansion of the Alaska Highway touring market;

(vi) Continued upgrading of the visual character of the community;

(vii) Maintenance and expansion of hospitality training programs in the community.

(viii) Preparation for Project '92, the 50th anniversary of the Alaska Highway.

3.3 FORESTRY

One of the key industrial sectors in the Fort Nelson area is the forest industry. Given the growing interest in hardwoods and the vast underutilized aspen resource in the Fort Nelson area, forestry will continue to be a dominant economic force in the foreseeable future.

Most forest industry activity in the Fort Nelson area is undertaken by Tackama Forest Products Ltd. (Some small-scale logging and milling also takes place.) Currently, Tackama operates a stud mill and veneer and plywood mill at Fort Nelson. The sawmill has an annual capacity of 72 million board feet/year and the plywood plant can produce 165 million square feet (3/8 inch basis)/year. These two operations together employ about 300 workers at the mill and 150 workers in logging, wood handling and forestry.

3.31 RESOURCE BASE[1]

(a) Current Annual Allowable Cost

The Town of Fort Nelson is located within the Fort Nelson Timber Supply Area (T.S.A.), which is comprised of 3 former Public Sustained Yield Units (PSYU) - Fort Nelson, Kotcho and Liard - and part of the Sikanni PSYU. There are

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1. This discussion of the forest resource base is based on the following reports:

   Ministry of Forests and Lands, Peace River - Fort Nelson Fibre Resource Study, Revised July 5, 1983.
   Ministry of Forests and Lands, Peace River - Fort Nelson Fibre Resource Study, Revised May 20, 1987.
   Ministry of Forests and Lands, Fort Nelson Timber Supply Area Yield Analysis Report, 1980.
   Reid Collins Forest Resource Consultants, Potential for an Aspen Processing Industry in Fort Nelson, prepared for the Village of Fort Nelson, September, 1987.

8,340,619 hectares of Crown land within the T.S.A. of which 3,428,391 hectares or 41 percent is considered productive forest land. About 1,663,088 hectares of Crown forest land is covered by mature forest and good and medium sites account for 1,281,322 hectares.

Major species present in the T.S.A. are white spruce, pine and deciduous (mainly aspen and balsam-poplar). The species distribution in terms of area is as follows.

Table 3.1

Species Distribution
(Excluding low site class)

	Area (hectares)	%
Spruce	1,332,707	43
Pine	531,469	17
Deciduous	1,250,660	40
Total	3,114,836	100

The Ministry of Forests and Lands (MoFL) has broken the Fort Nelson T.S.A. into 12 Supply Blocks based on similarity of timber types, existing and/or planned road systems, and haul distances from Fort Nelson. The MoFL has included only Near (0-70 km) and Medium (70-170 km) Zone Supply Blocks in the harvest rate estimates and subsequent establishment of the allowable cut. The Near and Medium Zones account for 70 percent of the mature area and almost 80 percent of the mature volume within the Fort Nelson T.S.A. Table 3.2 summarizes species distribution within the Fort Nelson T.S.A. As shown, spruce and aspen are the major species present.

Table 3.2

Species Volume Distribution By Zone
(%)

Species	TSA All Zones	Near Zone	Medium Zone	Far Zone
Balsam	7	2	13	5
Spruce	43	40	43	53
Lodgepole pine	12	8	8	24
Cottonwood/Balsam Pop.	5	6	5	2
Birch	5	5	6	2
Aspen	28	39	25	14
TOTAL	100	100	100	100

As a result of past overcutting and an imbalance between the species profile (the actual forest harvest has been almost 100 percent spruce sawlog), the approved timber allocation was reduced from a total of 1,015,480 m^3 to approximately 750,000 m^3 for coniferous sawlogs and 100,000 m^3 for deciduous (balsam-poplar) peeler logs. All of this timber is allocated to Tackama Forest Products with the exception of approximately 3,500 m^3 for the Small Business Enterprise Program.

(b) Potential Annual Allowable Cut

In addition to the current committed AAC, several estimates regarding the potential AAC in the Fort Nelson T.S.A. have been made by the Ministry of Forests and Lands and Reid, Collins and Associates (the consultant retained by the Town of Fort Nelson).

Reid, Collins concludes that the net AAC for the Fort Nelson T.S.A. (Near and Medium Zones only) could be in the order of 2,200,000 m^3, which can be broken down as follows:

523,000 m^3 - pure coniferous sawlog types
315,000 m^3 - coniferous pulpwood types
990,000 m^3 - aspen types
233,000 m^3 - coniferous/deciduous sawlog types
139,000 m^3 - all other types

It is estimated that the potential AAC would be 48% coniferous (spruce/pine) and 52% deciduous (aspen/cottonwood/birch/balsam-poplar). It is obvious from the above that the deciduous species are a determining factor in timber utilization in the Fort Nelson T.S.A. It should also be noted that of the deciduous component, about 75% will be aspen and only 25% will be cottonwood/birch/balsam poplar.

3.32 DEVELOPMENT POTENTIAL

Given the availability of unexploited timber resources, forest products appear to present opportunities for further industrial development in the Fort Nelson area. These opportunities are described in this section.

(a) Bleached Chemi-thermomechanical Pulp (CTMP)

A bleached CTMP mill with a daily capacity of 500 tonnes has been identified as a promising development opportunity for Fort Nelson. Bleached CTMP has been gaining market

acceptability and CTMP made of a combination of softwood and deciduous fibre (such as aspen) can compete favourably with the bleached short-fibred chemical pulps from hardwoods in many paper and paper board grades.

A bleached CTMP mill of minimum economic scale would require a capital investment of $150 - 200 million and an annual wood supply of 270,000 m^3 of softwood and 290,000 m^3 of hardwood. The pulp mill would create about 90 jobs in the mill and 150 jobs in forestry and wood handling.

The primary factor in favour of a bleached CTMP proposal is the availability of good quality timber at a reasonable cost. Aspen stands are particularly accessible from Fort Nelson. As a result, the wood cost for a CTMP mill would be very competitive.

(b) Oriented Strand Board (OSB)

Oriented strand board (OSB) is a second generation waferboard which can compete favourably with plywood in most end uses. While the annual capacity of the minimum economy of scale plant can be as small as 75 million sq. ft. (3/8" basis), most of the plants built in recent years have an annual capacity of 250-300 million sq. ft. An OSB mill of the latter size would need an annual wood supply of 500,000 m^3 and cost $50-60 million to build. Such a mill would create 100 jobs in the mill and 150 jobs in logging and forestry.

The market for an OSB mill located in the Fort Nelson area could be the U.S. west coast where the penetration level of waferboard is still relatively low. An OSB mill would have a considerably smaller electricity requirement (5 MW) than that of

a CTMP mill. An OSB mill would also benefit from the availability of low cost aspen in the Fort Nelson T.S.A. The production of OSB does not require wood quality as high as for lumber.

(c) Specialty Lumber and Value-added Wood Products

The Fort Nelson T.S.A. has high quality wood stands which may provide some small scale development opportunities for Fort Nelson. These potential developments are outlined as follows.

(i) The Fort Nelson T.S.A. has some high quality spruce stands which are currently used in the production of commodity lumber by a local company. This high quality spruce could potentially be used in the production of value-added products e.g. panels, window and door stocks.

(ii) The production of lumber using higher quality aspen is also an opportunity worth pursuing. However, what needs to be further investigated is the marketability of aspen lumber and the technical problems associated with aspen processing (e.g. drying). Such an operation could be integrated with a pulp mill or a waferboard mill to utilize high grade aspen logs.

(iii) Balsam-poplar, a hardwood species, is currently utilized by a local company in the production of plywood (mainly for core stock). Aspen, which is available in a much larger quantity, could potentially be a good feedstock for veneer and plywood production. This would require further research efforts.

(iv) Apart from aspen and balsam-poplar, birch is also available in a relatively large volume. This indicates that the possibility of establishing a component

manufacturing facility based on birch and other hardwoods should be investigated.

The following table summarizes the key features of opportunities reviewed by government.

Table 3.3

Summary of Opportunities

	Capital Cost ($ million)	# of Jobs	Power Requirement	Wood Supply
Bleached CTMP	$150 - 200	240	High	Sufficient
Oriented Strand Board	50 - 60	250	Low	Sufficient
Lumber & Remanufacturing	2 - 5	30-40	Not significant	Good

3.33 ISSUES

Further development of the forest industry in the Fort Nelson area will be affected by the following issues.

(a) Electricity Supply

The forest industry in general, and the pulp and paper industry in particular, is very electricity intensive. The cost of power to the forest industry in Fort Nelson is equivalent to that in other regions of British Columbia, however, the existing natural gas-powered generating units in Fort Nelson do not have sufficient capacity for a pulp mill. Integration of Fort Nelson into B.C. Hydro's hydroelectric grid is one way of solving the problem. This would require construction of a 360 km 230 KV transmission line from Fort St. John. Another option is to increase power capacity using the latest gas-fired power generation technology.

(b) Availability of Softwood Resource

The coniferous timber resource in the Fort Nelson T.S.A. was over-committed in the past. This led to a reduction in the allowable cut of 1,015,480 m^3 to 750,000 m^3. While there is a possibility that additional coniferous resource will be available from mixed stands, it is unclear how large a volume can be made available from these sources until the level of harvest for aspen is known.

A related issue in this regard is the availability of softwood chips for pulp manufacture. Currently, Tackama Forest Products produces a large volume of spruce chips, some of which are for export through Fibreco Export Ltd., some sold to pulpmills at Prince George and the remainder wasted. This is a good source of chip supply for a pulp mill at Fort Nelson, provided that the chips are not allocated to the Fibreco pulp mill under construction in Taylor.

(c) Logging Seasons

Geographically, the Fort Nelson area lies within the Arctic region and the forest land is largely intermixed with black spruce sites, swamps and muskegs. As a consequence, harvesting can only be carried out from approximately November to March when frozen ground provides access.

This short logging season may be a concern for the utilization of aspen in pulp and waferboard production. Thus, there is a need to undertake further analysis of opportunities for logging aspen in the summer if any aspen-based forest product project is to be pursued.

(d) Inventory

A reinventory of the entire Fort Nelson T.S.A. is needed given that only the inventory data of the former Fort Nelson PSYU has been updated in recent years. Such a reinventory would be able to provide answers to the following questions:

1. How much conifer is available from the mixed stands and the aspen undergrowth, and where?

2. How much decidous timber, particularly aspen, is available, and where?

An up-to-date inventory will be an essential tool to understand and exploit the forest development potential of the Fort Nelson area.

3.4 MINERALS

3.41 RESOURCE BASE

At present, there are no operating mines in the Fort Nelson area nor is there any significant mineral exploration activity. In the past, however, Fort Nelson benefitted from the operations of the Magnum copper mine, which produced ore 160 km southwest of Fort Nelson in the 1970's and the Cadillac silver-lead-zinc property, which was under development in the Northwest Territories during the early 1980's.

3.42 DEVELOPMENT POTENTIAL

(a) Primary

Even though there are no known prospects for mineral and coal development in the Fort Nelson area, the community's strategic geographical position may permit it to benefit from mineral exploration or production activities undertaken beyond the boundaries of the immediate Fort Nelson area, e.g. the Stikine, southeastern Yukon, southwestern NWT, and northwestern Alberta. Fort Nelson's location in relation to regional transportation facilities, its current position as a service centre for the oil and gas industries, and its comprehensive array of community services together indicate a potential for further development as a staging ground and supply centre.

The Midway property located on the British Columbia-Yukon border is one of several potential mining developments in the north which, although located some distance from Fort Nelson may, nevertheless, impact positively on the community. Economic benefits from this mine could accrue to Fort Nelson, especially if the lead and zinc concentrates produced at the mine were shipped by rail to the smelting facilities in Trail, British Columbia. In that case, Fort Nelson could expand its role as a transportation centre by capitalizing on the transfer in Fort Nelson of concentrates from truck to railcar, and the reverse flow of fuel and other supplies.

(b) Secondary

An area where potential for resource processing may exist is in the production of peat (sphagnum) moss. The area surrounding Fort Nelson contains large amounts of muskeg or bog. A detailed inventory of peat resources could potentially reveal deposits of high quality near Fort Nelson.

New markets for sphagnum moss may change the prospects for this resource in the future. For example, a small pulp mill at Desbiens, Quebec, is to produce a new absorbent material for health care products. This new material, which was developed by Johnson & Johnson Inc. researchers, could open up a vast new market and greatly increase the demand for sphagnum moss.

3.5 OIL AND NATURAL GAS

3.51 RESOURCE BASE

The Fort Nelson region contains the three largest natural gas fields in the province on the basis of productive capacity. Although these fields are in decline, they contribute as much as 50 percent of the Province's natural gas production. The area also includes a variety of smaller fields that are currently producing, as well as three large and numerous smaller unconnected fields. One of the unconnected fields could be brought on in the early 1990's. The others will require better economic and market conditions than currently prevail, but will provide the basis for future growth. As exploration in the area proceeds, new opportunities will likely arise.

Fort Nelson is the site of a large natural gas processing plant with a maximum output of 750 million cubic feet per day of residue gas. The plant is also capable of extracting up to 650 long tons per day of sulphur from raw gas streams. This represents almost half of Westcoast's processing capabilities. In the short term, with the Taylor plant operating at capacity, Fort Nelson becomes an important source of processing capacity for direct gas sales. This should help improve capacity utilization over the next several years.

With respect to oil, the 1985 Desan discovery represents the most significant recent activity in the Fort Nelson area. The discovery has generated great interest, although the reserves discovered to date are not of commercial size at today's prices. A significant exploration program could potentially expand established reserves enough to justify development.

3.52 DEVELOPMENT OPPORTUNITIES

The Province has taken a number of steps to deregulate oil and natural gas marketing. These steps include price deregulation, relaxed export restrictions, the introduction of direct natural gas sales, and the planned privatization of the British Columbia Petroleum Corporation. Fort Nelson should be well positioned to take advantage of the opportunities created by these steps. This is already apparent in the direct gas sales market.

With respect to the oil and gas service industry, the outlook is bright. As existing reserves continue to decline in productive capacity, and gas markets stabilize or improve, there will be a requirement for additional production. This will be met through increased drilling or the addition of compression facilities to existing reserves. Alternatively, currently unconnected reserves could be integrated. This option would involve drilling activity as well as gathering pipeline construction.

It is probable that the Fort Nelson area will experience continued oil and gas exploration. The area is typical of much of British Columbia in that it has not been thoroughly explored and there is significant potential for future discoveries. In addition, exploration work is likely to continue in the Yukon and Northwest Territories where a number of discoveries have been made to date, and the benefits of such activity will accrue to Fort Nelson. The extent of exploratory activity will depend heavily on future energy prices, as well as industry's assessment of the relative attractiveness of the region's geology.

3.6 ELECTRICITY GENERATION

3.61 Resource Base

Electric power in the Fort Nelson area is supplied by a 27.1 MW thermal generating plant fuelled essentially by natural gas. Fort Nelson's peak load is approximately 13.5 MW. In 1986/87, energy consumption was 64 GW.h with an overall load factor of 29 percent.

Given the area's primarily flat topography, there is no realistic potential for future small hydro development except possibly along the western boundary. Fort Nelson will be the service centre for the Liard River development. Construction of this large hydro project is expected to occur sometime after the 1990's.

Electricity prices at Fort Nelson (residential and commercial) are equivalent to rates paid by such customers in B.C. Hydro's integrated system. Part of the rate is indexed to natural gas prices which should remain relatively flat for the next few years, resulting in stable electricity prices.

3.62 Development Opportunities

Industrial development opportunities have been constrained for many years because Fort Nelson is not connected to the integrated grid. In recognition of this fact, the provincial Cabinet has approved in principle a change to B.C. Hydro's policy regarding integration of remote communities into its power transmission grid. This policy, which at this time is under review by the B.C. Utilities Commission, expands the circumstances under which communities like Fort Nelson would be integrated into the power grid. Review of the issue of power supply to Fort Nelson has been identified as a priority by the provincial government.

Another option for power supply is to increase production capacity at Fort Nelson using the latest gas-fired generation technology. The attractiveness of this option varies in inverse proportion to forecasts of the future price of natural gas. However, it is possible to purchase gas on long term contracts at firm prices, and, in certain circumstances the cost may be lower than the integration option. Further research is required to determine both capital and operating costs at various nameplate capacity levels and operating ratios.

APPENDIX

Table 1

INDIVIDUAL TAX RETURNS, FORT NELSON[1]

1984

Reported Income	Number of Returns
Under 6,000	681
6,000 - 9,999	352
10,000 - 14,999	343
15,000 - 19,999	254
20,000 - 29,999	481
30,000 - 39,999	380
40,000 and over	305
All returns	2,796

Table 2

PERSONAL TAXATION STATISTICS, FORT NELSON[1]

1979 - 1984

Year	Total Income Reported ($000)	Average Income ($)
1979	58,734	12,721
1980	68,066	13,795
1981	52,189	17,442
1982	55,626	19,809
1983	50,073	18,416
1984	54,278	19,413

1. Tax returns are identified with a particular community on the basis of postal location rather than municipal boundaries.

Source: Central Statistics Bureau, Ministry of Economic Development

Table 3

LICENCED MOTOR VEHICLES[1]

FORT NELSON

Licence Year	Passenger	Commercial
1982	1,218	1,586
1983	1,198	1,525
1984	1,158	1,530
1985	1,230	1,544
1986	1,234	1,495

*Based on Motor Vehicle District codes.

Source: Motor Vehicles Department, Ministry of Transportation and Highways.

Table 4

BUSINESS INCORPORATIONS AND BANKRUPTCIES[1]

FORT NELSON

Year	Incorporations	Bankruptcies
1981	40	2
1982	9	2
1983	7	1
1984	9	2
1985	16	3
1986	7	2

1. May not correspond with municipal boundaries. There are no records of proprietorships or partnerships which are not incorporated under law, nor of businesses that do not file for formal bankruptcy.

Source: Central Statistics Bureau, Ministry of Economic Development

Table 5

HOUSING DATA

FORT NELSON 1981

Occupied Dwellings	1,210
Owned	605
Rented	610
Single detached	545
Single attached	100
Apartment	255
Duplex	25
Other (mobile, etc.)	285

Table 6

HOUSEHOLDS AND FAMILIES

FORT NELSON 1981

Private households	1,210
1 person	220
2	305
3	230
4 - 5	380
6 - 9	80
10 or more	-
Average	3.0

Families in Private households	925
By number of children at home	
0	260
1	235
2	235
3 - 4	180
5 or more	10
Total number of children at home	1,355

Table 7

POPULATION CHANGE 1971 - 81

FORT NELSON

	1971	1976	1981
Total Population (Census Data)	2,290	2,915	3,725
Males	1,215	1,520	1,945
Females	1,075	1,395	1,780
Under Age 15	865	1,020	1,080
Aged 15 to 64	1,390	1,860	2,600
Aged 65 or Over	35	35	50
Total Private Households	585	830	1,210
Persons per Household	3.7	3.4	3.0
Owned Dwellings	310	480	605
Rented Dwellings	280	355	610
Total Families	570	670	925
Persons per Family	3.9	3.7	3.4
Children per Family	n.a.	1.8	1.5
Husband-Wife Families	n.a.	620	825
Lone-Parent Families	n.a.	50	100

Table 8

PUBLIC SCHOOLS ENROLLMENT

SCHOOL DISTRICT 81, FORT NELSON

1977-78	1,122
1978-79	1,165
1979-80	1,196
1980-81	1,206
1981-82	1,156
1982-83	1,167
1983-84	1,100
1984-85	1,075
1985-86	1,095